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EXAMINER

ALEJANDRO MULERO, LUZ L

ART UNIT PAPER NUMBER

1763

DATE MAILED: 05/22/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/882,515

Applicant(s)

UHLENBROCK, STEFAN

Examiner

Luz L. Alejandro

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☐ Responsive to communication(s) filed on 24 March 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☐ Claim(s) 31,32 and 45-57 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☐ Claim(s) 31,32 and 45-48, 50-54, 56-57 is/are rejected.
- 7) ☐ Claim(s) 49 and 55 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☒ The ~~proposed~~ drawing correction filed on 24 March 2003 is: a) ☒ approved b) ☐ disapproved by the Examiner.
- ~~If approved, corrected drawings are required in reply to this Office action.~~
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413) Paper No(s) \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 31-32, 45-46, and 51-52 are rejected under 35 U.S.C. 103(a) as being unpatentable over Admitted prior art in view of Freemantle (C&EN).

Applicant admits on page 8, line 24 of the specification that Fig. 1 shows a conventional apparatus. The conventional apparatus consists of an apparatus capable of vaporizing and transporting precursor molecules to a chamber capable of depositing a thin film on a substrate, the apparatus comprising: a vessel 42 capable of containing an ionic liquid; a carrier gas source 44 in fluid communication with the vessel 42; a bubbler device capable of bubbling a carrier gas through the vessel; a chamber 10 capable of deposition in fluid communication with the carrier gas source 44; and a gas line 45 capable of transporting carrier gas and vaporized precursor molecules from the vessel to the deposition chamber (see page 10-line 22 of specification to page 11-line 21).

Admitted prior art fails to expressly disclose an ionic liquid source, specifically, an ionic liquid source as recited in claims 45-46 and 51-52. Freemantle discloses the use of ionic liquids in a variety of applications and also discloses wide ranging advantages of ionic liquids such as high thermal and chemical stability, large liquid temperature

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range, and no vapor pressure, for instance (see pages 32-33). Specifically, Freemantle also discloses the ionic liquid sources of claims 45-46 and 51-52 (see the figure at bottom of page 32). In view of this disclosure, it would have been obvious to one of ordinary skill at the time the invention was made to modify the apparatus of the Admitted prior art so as to include an ionic liquid source in the precursor vessel because ionic liquids have the advantage of being nonvolatile, with no vapor pressure, a large liquid temperature range, and high chemical and thermal stability.

Claims 47 and 53 are rejected under 35 U.S.C. 103(a) as being unpatentable over Admitted prior art in view of Freemantle (C&EN) as applied to claims 31-32, 45-46, and 51-52 above, and further in view of Blomgren et al., U.S. Patent 5,188,914.

Admitted prior art and Freemantle are applied as above but fail to expressly disclose the specific ionic liquid of claims 47 and 53. Blomgren et al. discloses the ionic liquid of claims 47 and 53 (see col. 2-line 49 to col. 3-line 5). In view of this disclosure, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the apparatus of the Admitted prior art modified by Freemantle so as to include the ionic liquid of Blomgren et al. depending upon the desired properties of the ionic liquid precursor and/or the particular process being conducted in the apparatus.

Claims 48 and 54 are rejected under 35 U.S.C. 103(a) as being unpatentable over Admitted prior art in view of Freemantle (C&EN) as applied to claims 31-32, 45-46, and 51-52 above, and further in view of Jones et al., U.S. Patent 4,839,249.

Admitted prior art and Freemantle are applied as above but fail to expressly disclose the specific ionic liquid of claims 48 and 54. Jones et al. discloses the ionic liquid of claims 48 and 54 (see col. 2-lines 45-55). In view of this disclosure, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the apparatus of the Admitted prior art modified by Freemantle so as to include the ionic liquid of Jones et al. depending upon the desired properties of the ionic liquid precursor and/or the particular process being conducted in the apparatus.

Claims 50 and 56 are rejected under 35 U.S.C. 103(a) as being unpatentable over Admitted prior art in view of Freemantle (C&EN) as applied to claims 31-32, 45-46, and 51-52 above, and further in view of Abdul-Sada et al., WO 95/21872.

Admitted prior art and Freemantle are applied as above but fail to expressly disclose the specific ionic liquid of claims 48 and 54. Abdul-Sada et al. discloses the ionic liquid of claims 50 and 56 (see abstract). In view of this disclosure, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the apparatus of the Admitted prior art modified by Freemantle so as to include the ionic liquid of Abdul-Sada et al. depending upon the desired properties of the ionic liquid precursor and/or the particular process being conducted in the apparatus.

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Claim 57 is rejected under 35 U.S.C. 103(a) as being unpatentable over Admitted prior art in view of Freemantle (C&EN) as applied to claims 31-32, 45-46, and 51-52 above, and further in view of Ballingall, III et al., U.S. Patent 4,911,101.

Admitted prior art and Freemantle are applied as above but fail to expressly disclose a second vessel containing a second precursor in fluid communication with the chamber. Ballingall, III et al. discloses a first vessel 15 containing a first precursor and second vessel 35 containing a second precursor in fluid communication with the reaction chamber (see fig. 3 and col. 9-line 52 to col. 10-line 7). In view of this disclosure, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the apparatus of the Admitted prior art modified by Freemantle so as to further comprise a second vessel containing a second precursor in fluid communication with the chamber as disclosed by Ballingall, III et al., because this would allow for the introduction of a first and a second precursor into the reaction chamber.

### ***Response to Arguments***

Applicant's arguments filed 3/24/03 have been fully considered but they are not persuasive. In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in

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the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, the motivation to combine the references comes from teachings in Freemantle relating to the advantages of using ionic liquids in a variety of applications as stated above, the fact that applicant has recognized another advantage which would flow naturally from following the suggestion of the prior art cannot be the basis for patentability when the differences would otherwise be obvious. See *Ex parte Obiaya*, 227 USPQ 58, 60 (Bd. Pat. App. & Inter. 1985).

Additionally, in response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971).

Concerning the arguments relating to the rejection of the dependent claims using the Blomgren et al., Jones et al., and Abdul-Sada et al. references, these references are used to show typical ionic liquid sources and are not relied upon to show the use of ionic liquid sources in any particular application.

***Allowable Subject Matter***

Claims 49 and 55 would be allowable if rewritten to include all of the limitations of the base claim and any intervening claims.

***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Luz L. Alejandro whose telephone number is 703-305-4545. The examiner can normally be reached on Monday to Thursday from 7:30 to 6:00.



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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory L. Mills can be reached on 703-308-1633. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.



Luz L. Alejandro  
Patent Examiner  
Art Unit 1763

May 19, 2003